

# The role of animacy in sentence production: Evidence from French

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## Complement order

- The complements of French ditransitive verbs can occur in either DO  $\prec$  IO or IO  $\prec$  DO order.

- (1) Pierre a donné [une fleur]<sub>NP</sub> [à Sophie]<sub>PP</sub>
- (2) Pierre a donné [à Sophie]<sub>PP</sub> [une fleur]<sub>NP</sub>

- Previous work in theoretical linguistics has identified a general preference for DO  $\prec$  IO order (Blinkenberg 1928, Berredonner 1987), as well as several factors influencing the order of complements, including:

- Weight (short  $\prec$  long): (Blinkenberg 1928, Berredonner 1987, Abeillé and Godard 2004, 2006)
- Definiteness (definite  $\prec$  indefinite) (Berredonner 1987)
- Discourse status (given  $\prec$  new) (Berredonner 1987)
- Lexical semantics of the verb (Schmitt 1987)

- However, a quantitative corpus analysis (Thuilier 2012) revealed a significant effect of length only.
- The preference for DO to precede IO was supported (70.4% of corpus examples were NP-PP).

## Animacy and sentence production

**Conceptual accessibility** (Bock and Warren, 1985): The ease with which the mental representation of some potential referent can be activated in or retrieved from memory.

- Assuming incrementality in sentence production (see e.g., Bock 1982), words that are more easily accessed from memory will tend to be produced first (Bock and Warren 1985, among others).
- **Animates** have been argued to be more conceptually accessible than inanimates, influencing the order of production (see Branigan et al. 2007).
- However, there has been a debate as to whether animacy affects a stage of production in which grammatical functions (such as subject and object) are assigned, or a stage that affects linear order.
- For Japanese, Tanaka (2011) finds evidence for an effect of animacy at both levels of production.

## Sentence recall study

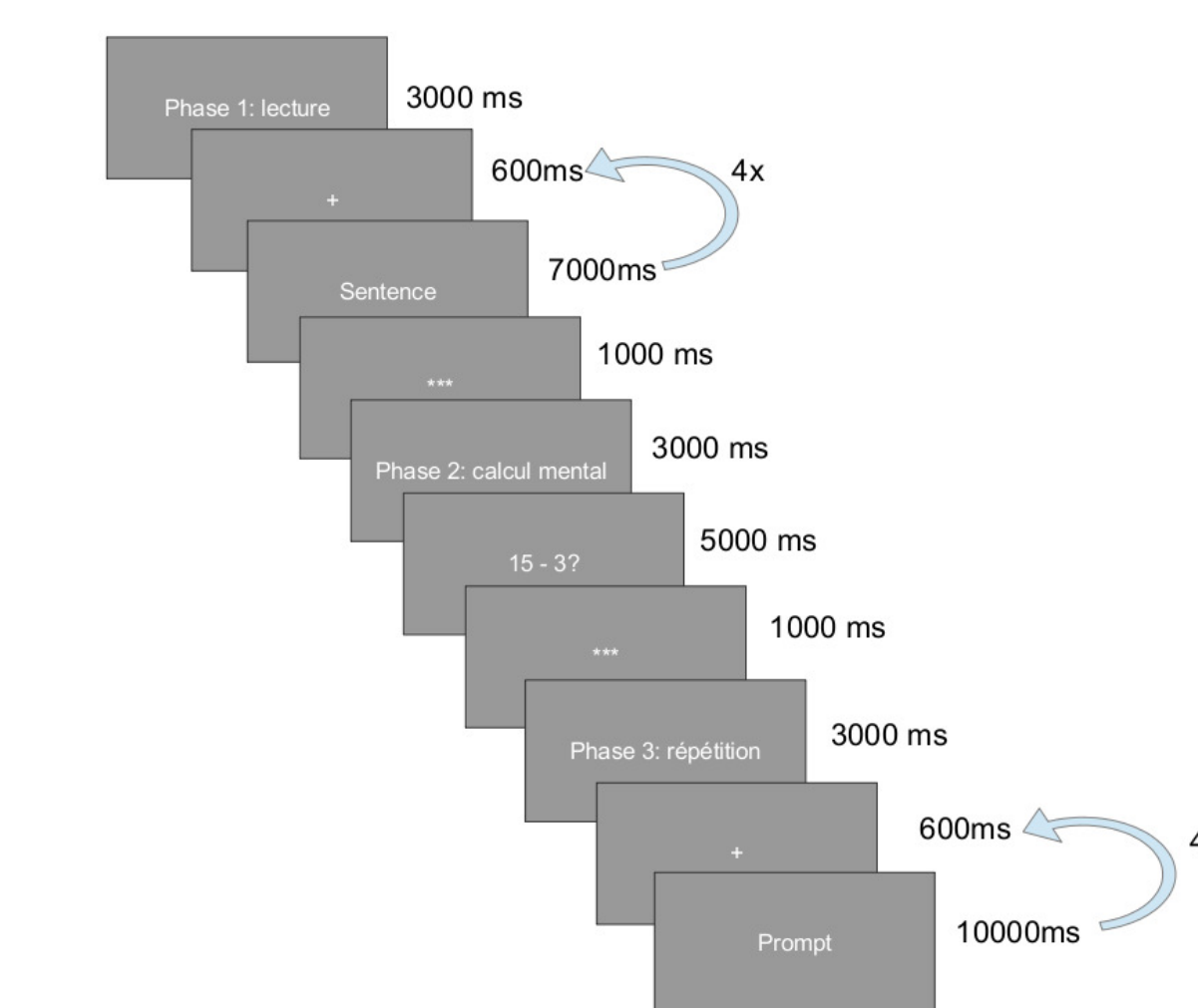
**Research Question:** Does animacy affect sentence production in French with respect to grammatical function assignment (e.g., subject, object), linear order, or both?

- Thuilier (2012) did not find a significant role for animacy in complement order, but this could have been due to confounds from other factors (e.g., length).
- If animacy affects linear order through conceptual accessibility, then we would expect a tendency to produce animate arguments first when other factors are controlled.
- In order to test this hypothesis, we followed others (see Branigan et al., 2007) in conducting a study of sentence recall, examining rates of order inversions as a way to detect effects of conceptual accessibility on production.

## Methods

### Materials:

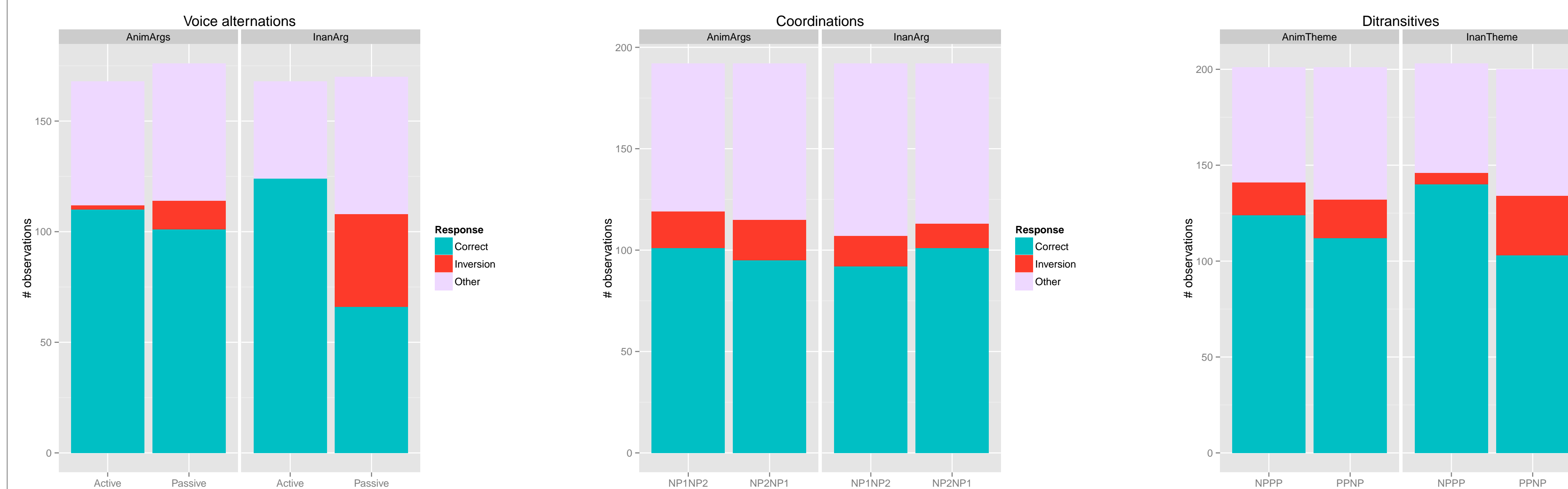
- (3) Voice alternations
  - a. Au bout de la ruelle, le policier a trouvé {le voleur/le revolver}.
  - b. Au bout de la ruelle, {le voleur/le revolver} a été trouvé par le policier.
- (4) Coordinations
  - a. Ce jeune homme a toujours fui les traîtres et {les lâches/les échecs}
  - b. Ce jeune homme a toujours fui {les lâches/les échecs} et les traîtres.
- (5) Ditransitives
  - a. Le chef de projet a confié {un agent commercial/un nouveau budget} à un décorateur.
  - b. Le chef de projet a confié à un décorateur {un agent commercial/un nouveau budget}.



### Procedure & Coding:

- 24 blocks, each containing Study, Distractor and Recall phases.
- 2 experimental groups: Group 1 - voice alternations and Group 2 - coordinations and ditransitives.
- Responses transcribed and coded by the first two authors (second coding in progress).
- Participants with less than 30% usable data were excluded from analysis, as well as subjects and items that had zero observations in a condition.
- Analysis of the filler items (identical across groups) revealed no significant differences in overall recall rate.

## Results



### Voice alternations (31 subjects, 22 items)

- Only two inversions from active to passive, so these were left out of analyses.
- Analyzing only the passive-active inversions, we find a significant effect of animacy (Estimate = .869, SE = -.27,  $z = 3.22$ ,  $p < .01$ ).

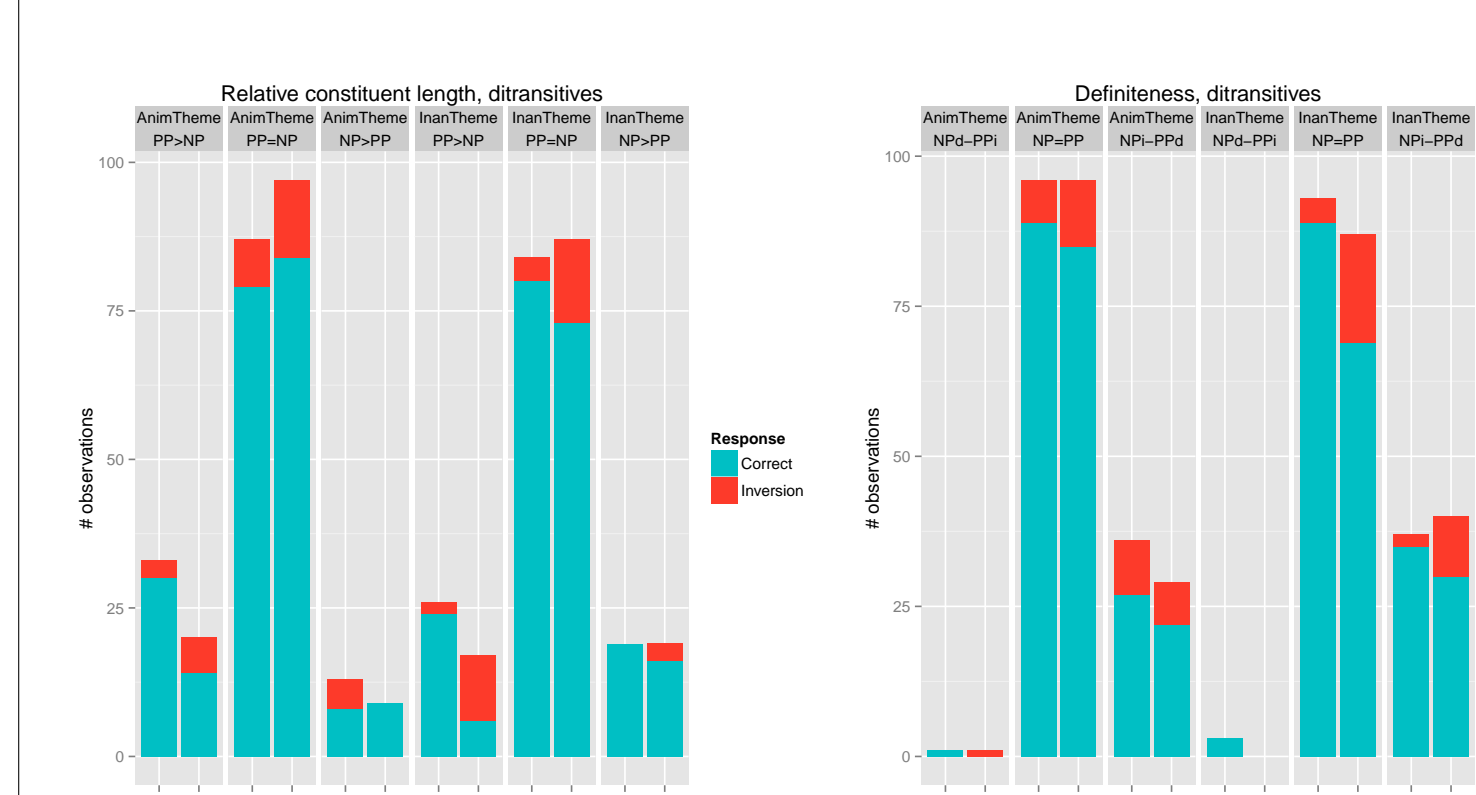
### Coordinations (31 subjects, 23 items)

- No significant effect of animacy on order of conjuncts.

### Ditransitives (33 subjects, 22 items)

- No tendency to put animate complements before inanimates.
- In fact the opposite was found, an interaction such that there were more inversions toward DO-IO order when DO was inanimate (Estimate = -0.69, SE = 0.20,  $z = -3.385$ ,  $p < .001$ ).

## Further analysis



- Productions were further coded for definiteness and length, which were controlled in the input sentences.
- These factors do not appear to drive the ditransitive pattern.

## Conclusions

- We replicated the animacy effect found for voice alternations in the production literature (e.g., McDonald et al 1993), but found no animate-first preference in coordinations or ditransitives.
- Because DOs are typically inanimate (87%, Thuilier 2012), and because DO-IO is the canonical order, we interpret our surprising result with ditransitives as suggesting that canonical arguments tend to be produced in canonical position.